Morrison

DINOSAURS!

•DISCOVER THE GIANTS OF THE PREHISTORIC WORLD•

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BARYONYX

***Baryonyx* caused great excitement when it was found. It was a totally new, large meat-eating dinosaur.**

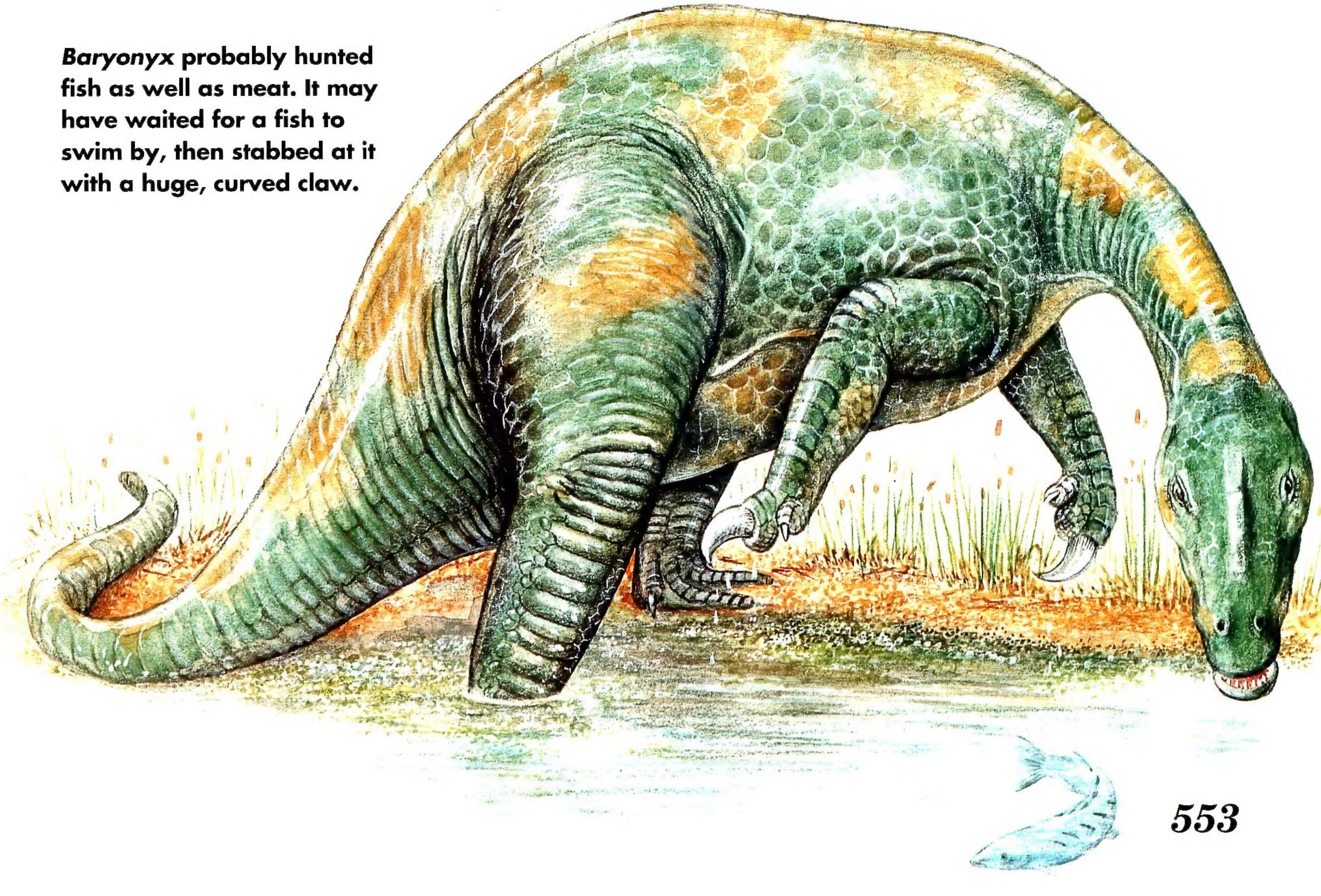
William Walker, a keen fossil hunter, made the discovery of a lifetime in 1983. Buried in a quarry in Surrey, England, was a gigantic curved claw as long as a large human foot. When experts from the British Museum were called in and started to search the quarry, they found a huge skeleton lying nearby. They named it *Baryonyx walkeri* after Mr Walker who found it.

FLAT HEAD

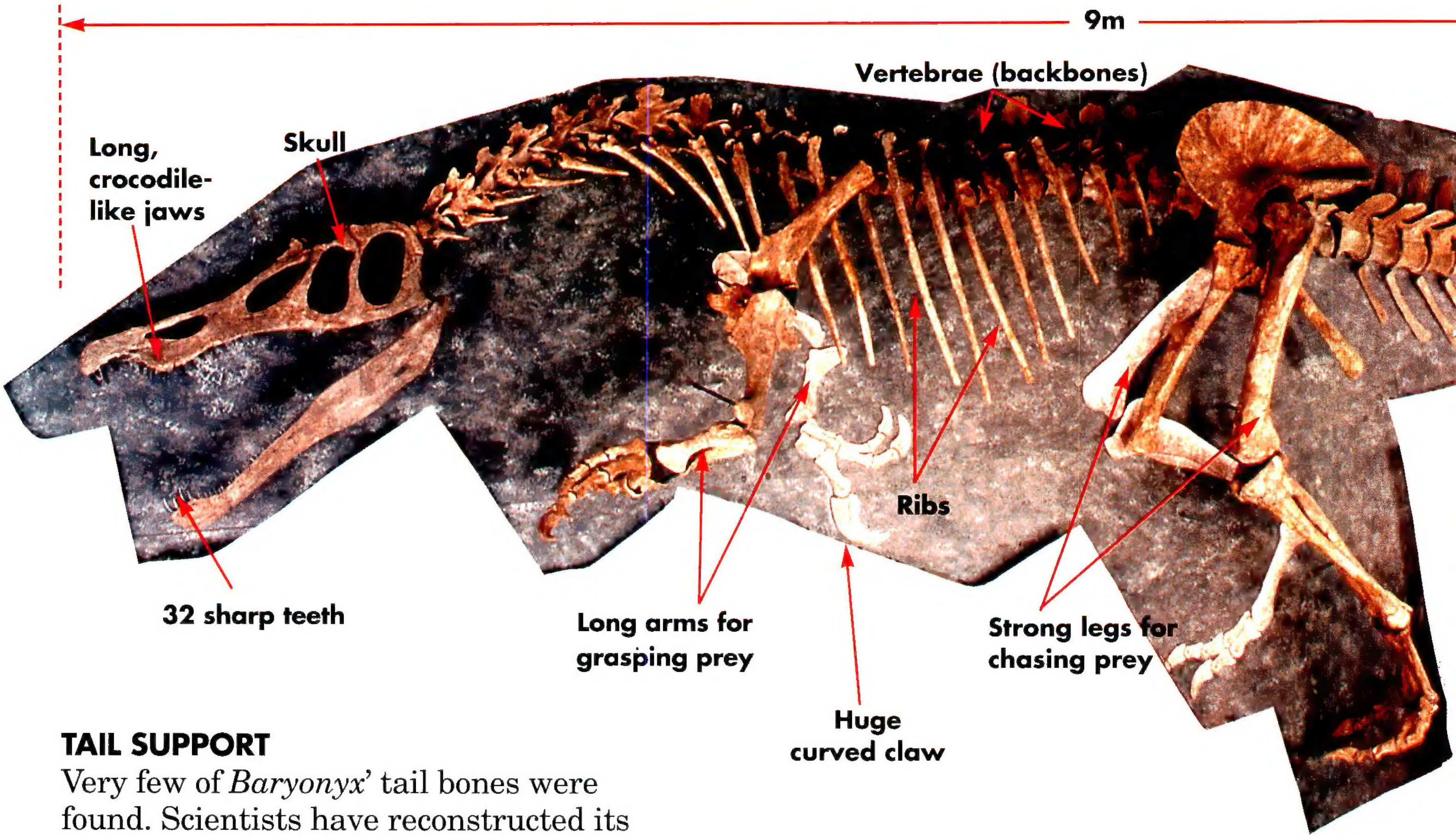
Imagine a crocodile standing as tall as a polar bear and as long as a bus. This will give you some idea of what *Baryonyx* looked like. Meat-eaters like *T rex* had short, deep heads with powerful jaws. But *Baryonyx* had a long, flat head with a little lump on top.

MISSING PIECES

Only about half of *Baryonyx'* bones have been found so far. Experts in England have pieced together the bones they have found and made copies of the missing ones. The result is an impressive skeleton.



***Baryonyx* probably hunted fish as well as meat. It may have waited for a fish to swim by, then stabbed at it with a huge, curved claw.**


9m
Vertebrae (backbones)
Long, crocodile-like jaws
Skull
32 sharp teeth
Long arms for grasping prey
Ribs
Huge curved claw
Strong legs for chasing prey

TAIL SUPPORT

Very few of *Baryonyx*' tail bones were found. Scientists have reconstructed its shape by looking at its backbones. Like many meat-eaters, *Baryonyx* had a tapering tail, which balanced the front half of its body when it ran on two legs.

LONG ARMS

Baryonyx had longer arms than most meat-eaters. When it stood still its weight was easily supported on all four limbs. But when *Baryonyx* wanted to run, it probably chose to use its two back legs. This left its clawed hands free for attack or defence.

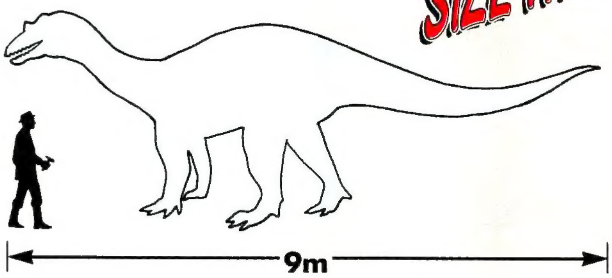
CROCODILE TEETH

Baryonyx' long jaw was full of fearsome, pointed teeth. The largest teeth were at the front of the snout. Further back were smaller, pencil-shaped teeth. Like a crocodile, *Baryonyx* may have used these to grasp a slippery fish before swallowing it whole. Or perhaps it used its long snout to nose around inside the rotting carcass of a dead animal.

MONSTER FACTS

- **NAME:** *Baryonyx* (bar-ee-on-ix) means 'heavy claw'
- **SIZE:** about 9m long and up to 4m tall
- **FOOD:** meat, possibly fish and dead animals
- **LIVED:** about 125 million years ago in the Early Cretaceous Period in southern England

SIZE WISE



Baryonyx' skeleton shows its powerful back legs and the long tail that it used for balance.

Is it true that fish are much older than dinosaurs?

Yes. By comparison with fish, dinosaurs seem quite young! Fish existed in the sea about 500 million years ago. But it was not until about 275 million years later that the first dinosaurs appeared on Earth. All land animals, including dinosaurs, evolved from fish.

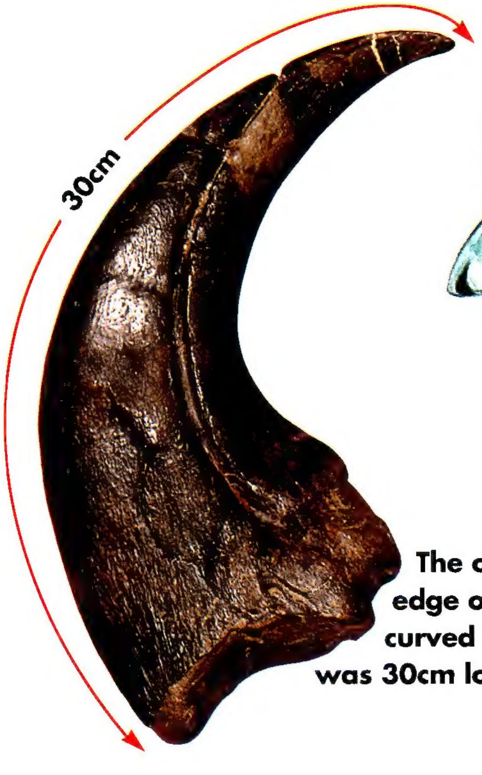
A FISHY CLUE

Scientists found a clue that showed that *Baryonyx* liked fish. Scales of the fossil fish, *Lepidotes*, were found near its rib cage. It seems that the dinosaur's last meal was a fish supper!

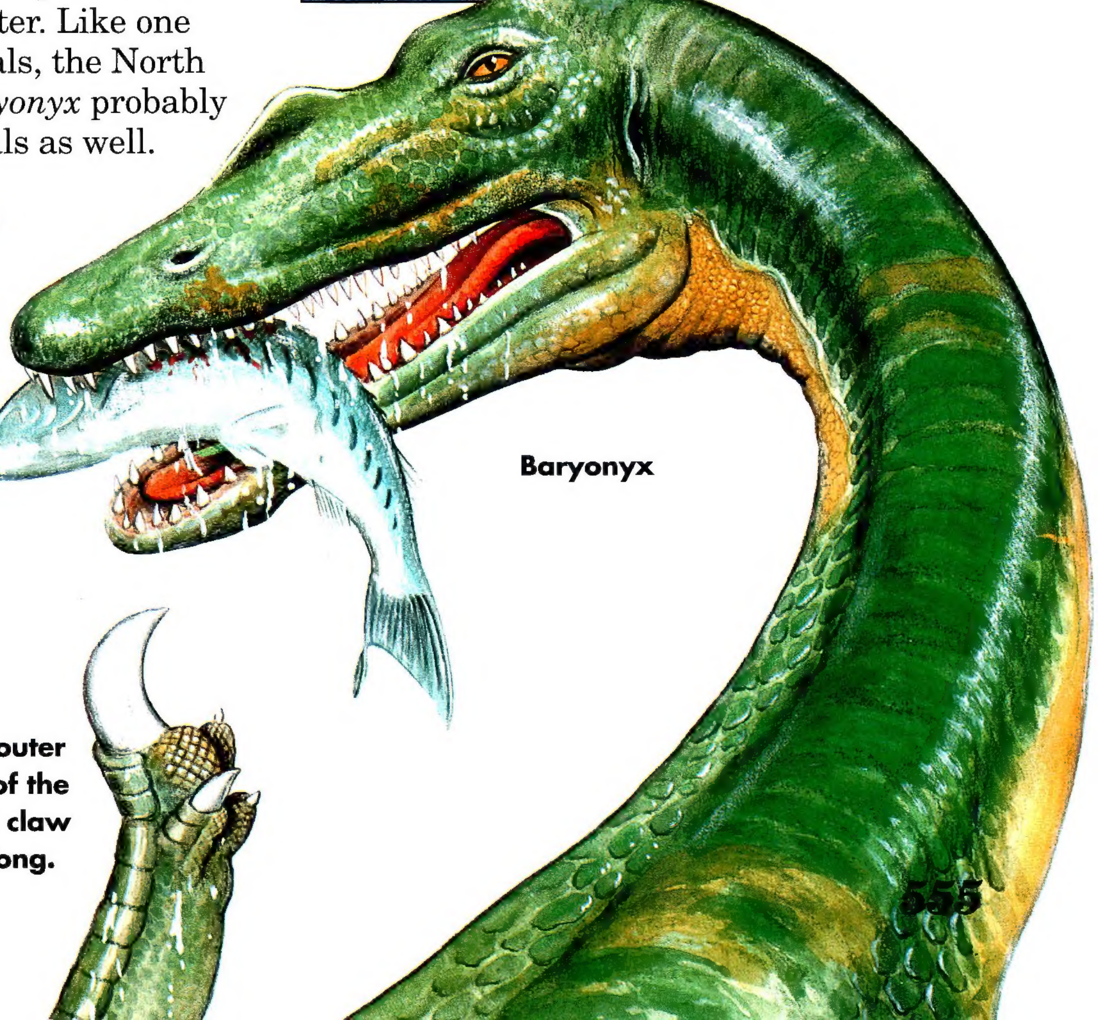
ALL HOOKED UP

Baryonyx had more than one way to catch fish. The giant claw on the inside of its three-fingered hand made a good fishing hook. *Baryonyx* probably waited quietly at the water's edge, ready to pounce. As fish swam by it used the claw to spear them and lift them out of the water. Like one of today's fish-loving animals, the North American brown bear, *Baryonyx* probably ate the flesh of dead animals as well.

What a catch! A North American bear (left) scoops a fish into its mouth using its claws. *Baryonyx* (below) may have gone fishing in a similar way, using its huge claw.



The outer edge of the curved claw was 30cm long.



NODOSAURUS

***Nodosaurus* was longer than two small cars and its body was covered with strong, heavy armour.**

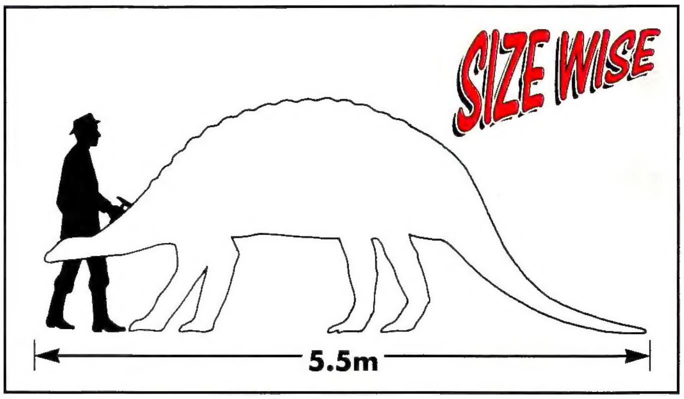
All along *Nodosaurus*' back were alternate rows of large and small nodules or lumps. This protective covering of thick, bony plates was important for a slow-moving plant-eater. As it browsed among low-growing plants *Nodosaurus* felt quite safe with its lumpy shield for protection.

STRONG SUPPORT

You may have seen pictures of medieval knights in full armour. These metal suits weighed up to 30kg and made it impossible for the knight to move quickly. *Nodosaurus* was weighed down by its heavy suit of armour. To help support this massive weight its body was held up by pillar-like legs with powerful muscles, and its short, broad feet helped spread the extra weight.

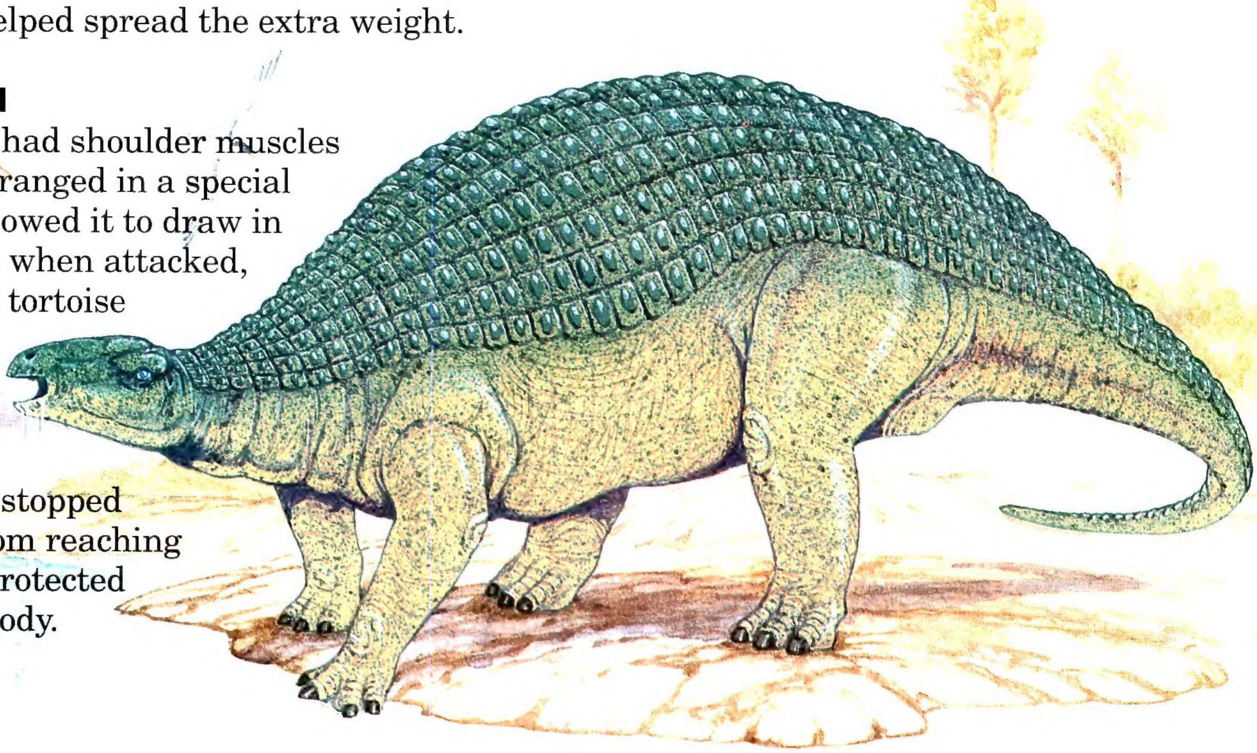
LOW DOWN

Nodosaurus had shoulder muscles that were arranged in a special way. This allowed it to draw in its front legs when attacked, rather like a tortoise today. By crouching low close to the ground *Nodosaurus* stopped predators from reaching the soft, unprotected parts of its body.



MONSTER FACTS

- **NAME:** *Nodosaurus* (node-oh-saw-rus) means 'knobbly reptile'
- **SIZE:** 5.5m long
- **FOOD:** plants
- **LIVED:** about 95 million years ago in the Late Cretaceous Period in Kansas and Wyoming, USA



DRYOSAURUS

Big-eyed *Dryosaurus* was as long as a rhinoceros. But it could move fast on two powerful hind legs.

Dryosaurus has been found in America and Africa. Today, these two continents are far apart but when *Dryasaurus* lived, in the Late Jurassic, they were joined together. Scientists think that *Dryosaurus* travelled all over this huge land mass.

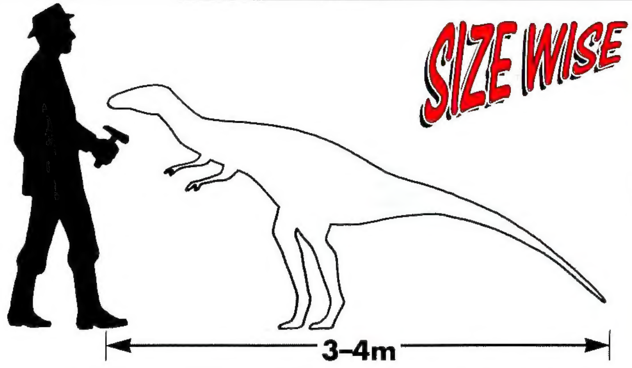
FIVE FINGERS

Dryosaurus had five fingers on each of its hands. As it moved about looking for food *Dryosaurus* probably used its hands to gather up plants. Sometimes it reached up with its strong arms and held on to branches while it fed.

ON THE LOOKOUT

Dryosaurus always had to be on the alert for predators. It used its keen eyesight to spot danger and its speedy legs to run away as fast as possible.

SIZE WISE

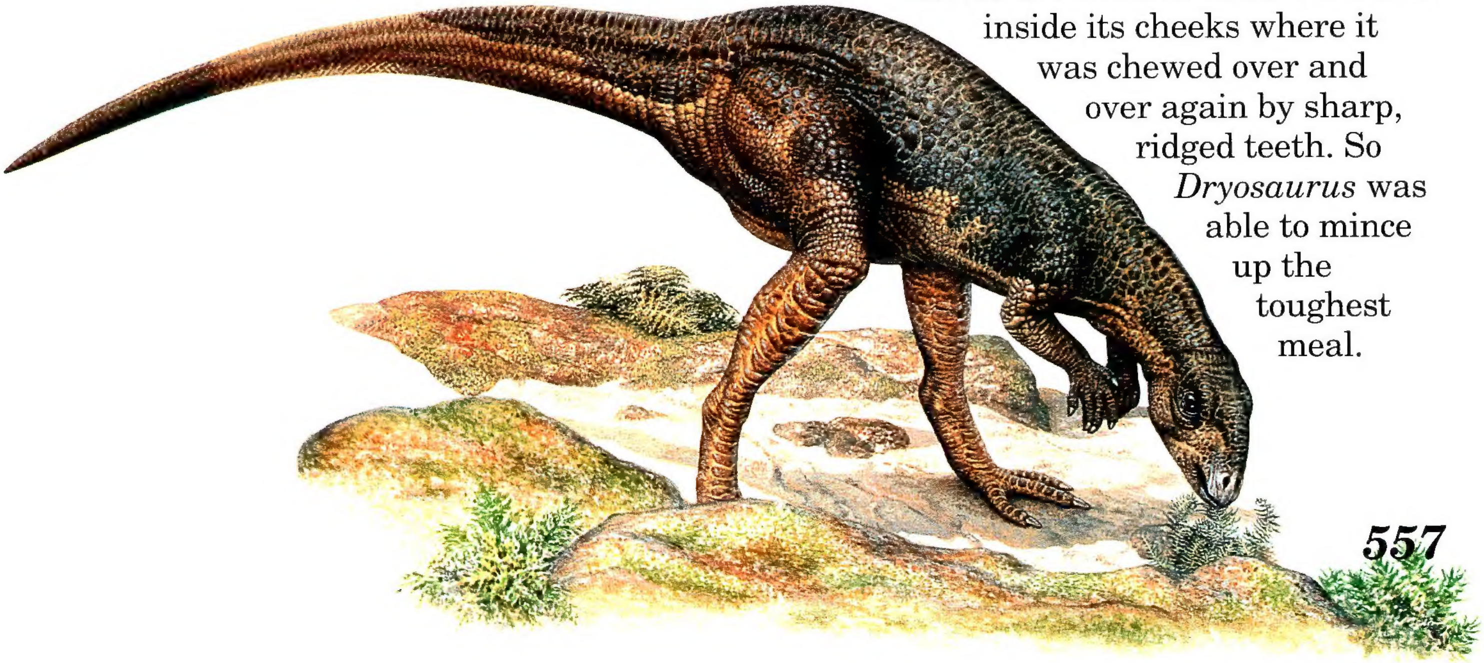


MONSTER FACTS

- **NAME:** *Dryosaurus* (dry-oh-saw-rus) means 'oak reptile'
- **SIZE:** up to 3 – 4m long
- **FOOD:** plants
- **LIVED:** about 150 million years ago in the Late Jurassic Period in North America, East Africa and Europe

CHEEK POUCH

Dryosaurus had no teeth at the front of its jaw, but used its bony beak to snap off leaves and shoots. It held the food inside its cheeks where it was chewed over and over again by sharp, ridged teeth. So *Dryosaurus* was able to mince up the toughest meal.



The first flowers

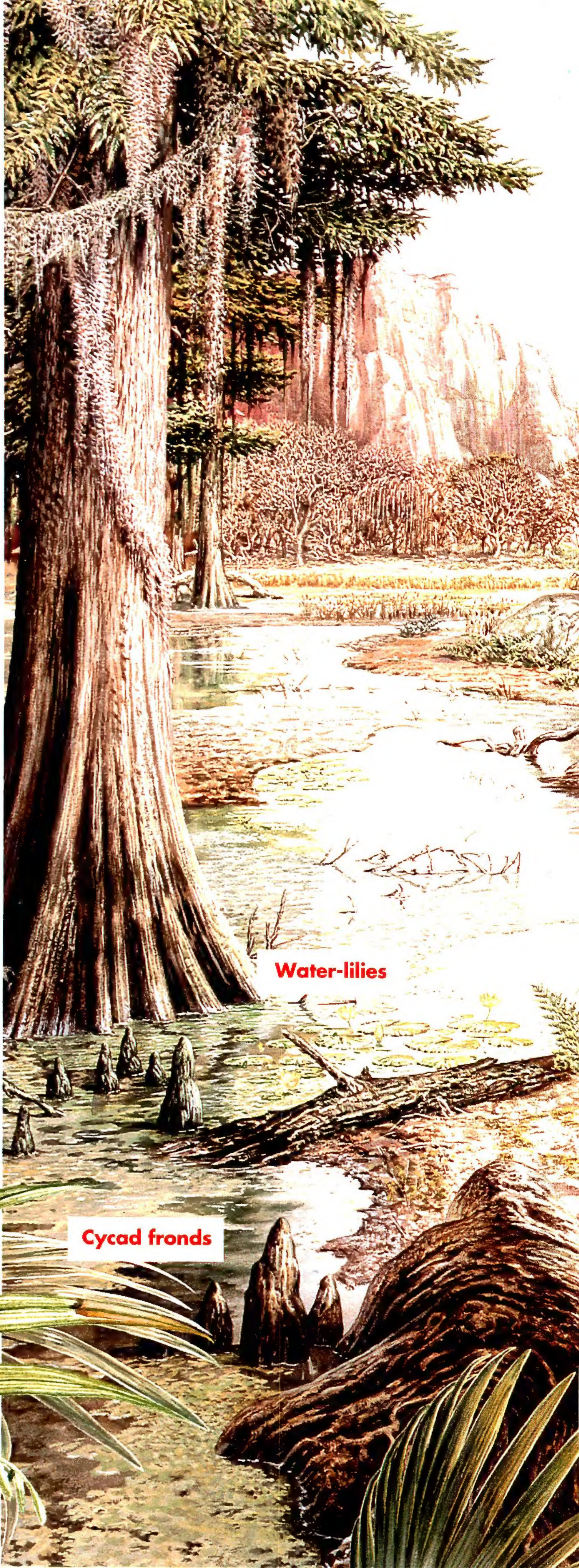
About 100 million years ago, one of the biggest events in the history of the planet happened – it was the coming of flowers.

At the beginning of the Age of the Dinosaurs the ground was carpeted with mosses and ferns, and shrubby horsetails and clubmosses grew instead of bushes. By the start of the Cretaceous, seas had flooded much of the land. The dinosaurs continued to evolve, and so did the plants they ate.

TRUE TREES

Up to this time, the world of plants had been green and brown. Tall tree-ferns and palm-like cycads were joined by the first true trees – conifers such as pines, yews and cypresses. More conifers followed, such as larches, spruces and cedars.

A cycad frond makes a good perch for shrew-like *Zalambdalestes* as it crunches its insect prey.



What is? AN ANGIOSPERM

Flowering plants are called angiosperms, which means 'enclosed seeds' or 'seeds in boxes'. A flowering plant protects its developing seeds deep within the flower, and then inside seed-cases or fruits. The other main group of plants with seeds, the conifers, are called gymnosperms, or 'naked seeds'. The seeds grow inside the cone, but they are not protected by a special casing.

THE COMING OF COLOUR

Then, during the Cretaceous, an enormous change happened. Flowers appeared. Soon the green world was covered with bright yellows, reds and blues, that had never been seen before.

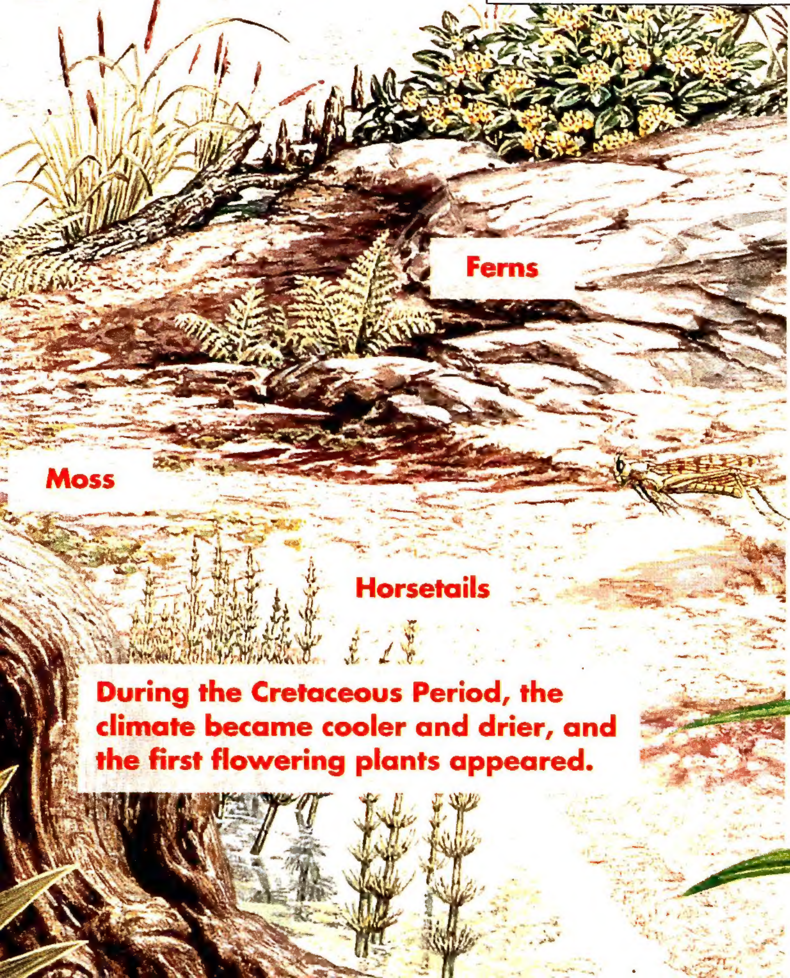
MARVELLOUS MAGNOLIAS

Some of the oldest fossils of flowering plants are leaves from magnolia trees. They are very similar to present-day magnolias. These grow over 30m high, and have glossy leaves and large, beautiful flowers. In Europe they grow in parks and gardens. But in Cretaceous times, Europe was warmer, and they grew wild, spreading far and wide.

FLOWERS RULE THE WORLD

There are over 250,000 kinds of flowering plants today – three times as many as all other types of plants added together. Their scientific name is angiosperms. They include all garden flowers, wildflowers and weeds, from dandelions to orchids, as well as herbs, grasses and palms. All bushes and trees that flower are angiosperms, from oaks to cherries, magnolias to mahoganies, apples to apricots.

Plant-eating dinosaurs may have nibbled at the velvety petals of magnolia flowers.



During the Cretaceous Period, the climate became cooler and drier, and the first flowering plants appeared.

WHERE DID FLOWERS COME FROM?

The first fossils of flowering plants show flowers that were already well-developed. There are no fossils to link them with non-flowering plants. So where did flowering plants come from?

EARLY ANCESTORS

Plants called cycadeoids may be the ancestors of flowers. These plants are similar to palm-like cycads and have female and male parts in the same cone. Scientists think that some may have evolved into flowers high on hills, where fossils were unlikely to form.

A PREHISTORIC FLOWER

The water-lily has a simple flower, which may be similar to the very first flowers. The sepals and petals are arranged in spirals around the tip of the stem. They look like the pattern of young leaves in a bud, or the woody scales in a pine cone.

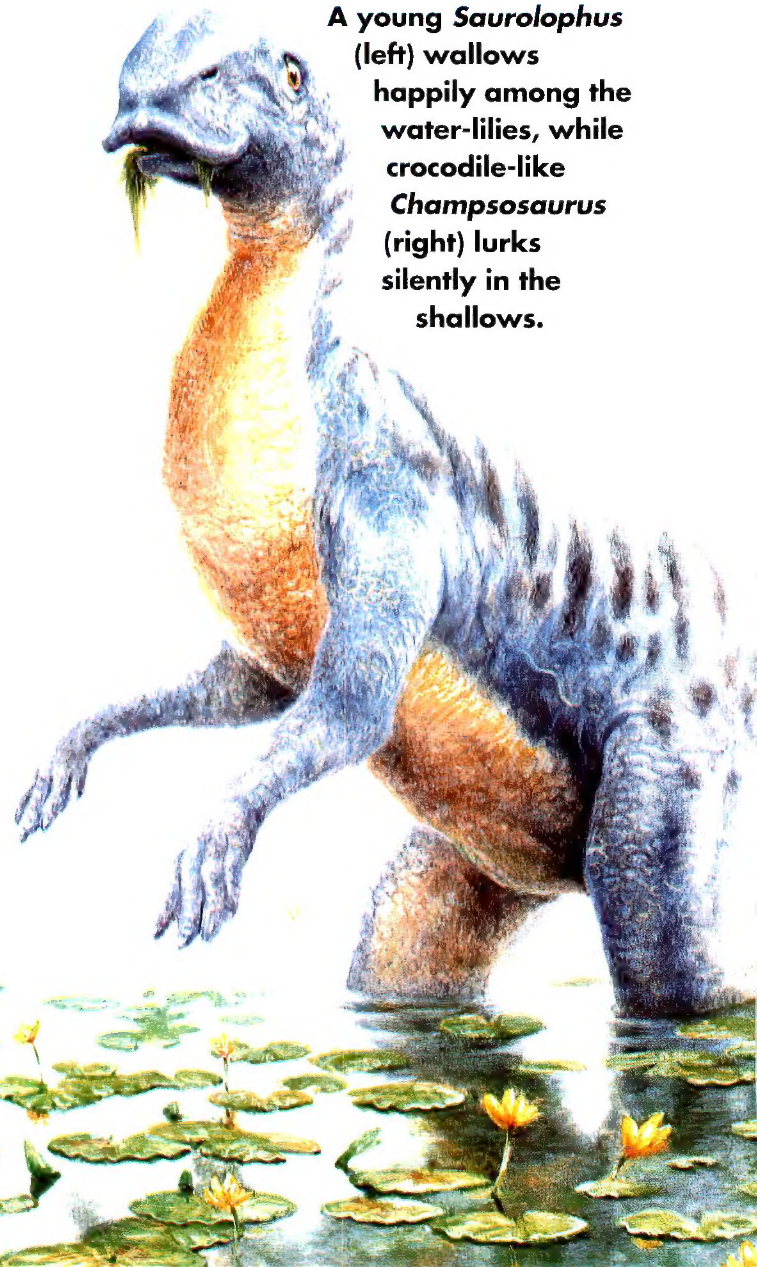
The water-lily may have been one of the first flowers to appear on Earth.

TOUGH REMINDERS

Most fossils are the remains of hard things, such as the teeth and bones of animals, or the bark and wood of trees. Like the soft flesh of animals, the delicate petals of flowers rarely formed fossils. The clues about plants that scientists have found come from the hard veins of their leaves, which make good fossils.

A black poplar tree today (below). Dinosaurs may have wandered among its tall, thin ancestors.

Groves of birch trees (above) were a common sight during the Cretaceous Period.



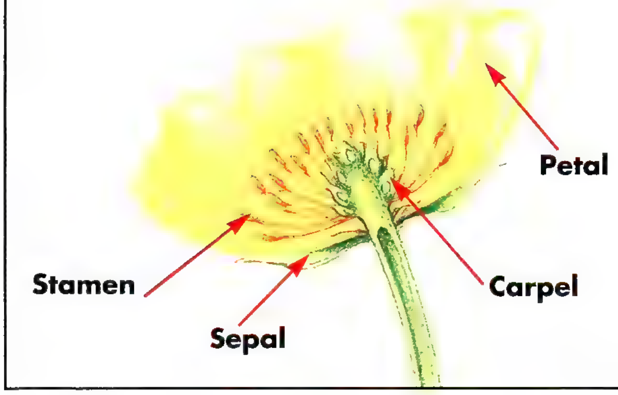
A young *Saurolophus* (left) wallows happily among the water-lilies, while crocodile-like *Champsosaurus* (right) lurks silently in the shallows.

FOSSIL BIRCH AND POPULAR POPLAR

Birch trees were common during Cretaceous times. Fossils of their rounded, saw-edged leaves have been found that are very similar to birch leaves today. Tall thin poplar trees also grew at this time.

What is? A FLOWER

A flower is a plant part which makes seeds that grow into baby plants. Inside the flower are the stamens, which make pollen grains containing male cells. In the heart of the flower is the carpel, which contains the female cells. Pollen grains travel from one flower to another. When the male cell joins with the female cell fertilisation takes place. The rest of the flower dies, but the fertilised cells grow into seeds.



BLOWING IN THE WIND

When flowering plants appeared, they needed ways to spread pollen from one flower to another. Wind was one option. Tiny, light pollen grains could blow miles. Many plants from dinosaur times, such as willows, are pollinated by wind today.

Bees carry pollen from flower to flower on their furry bodies.

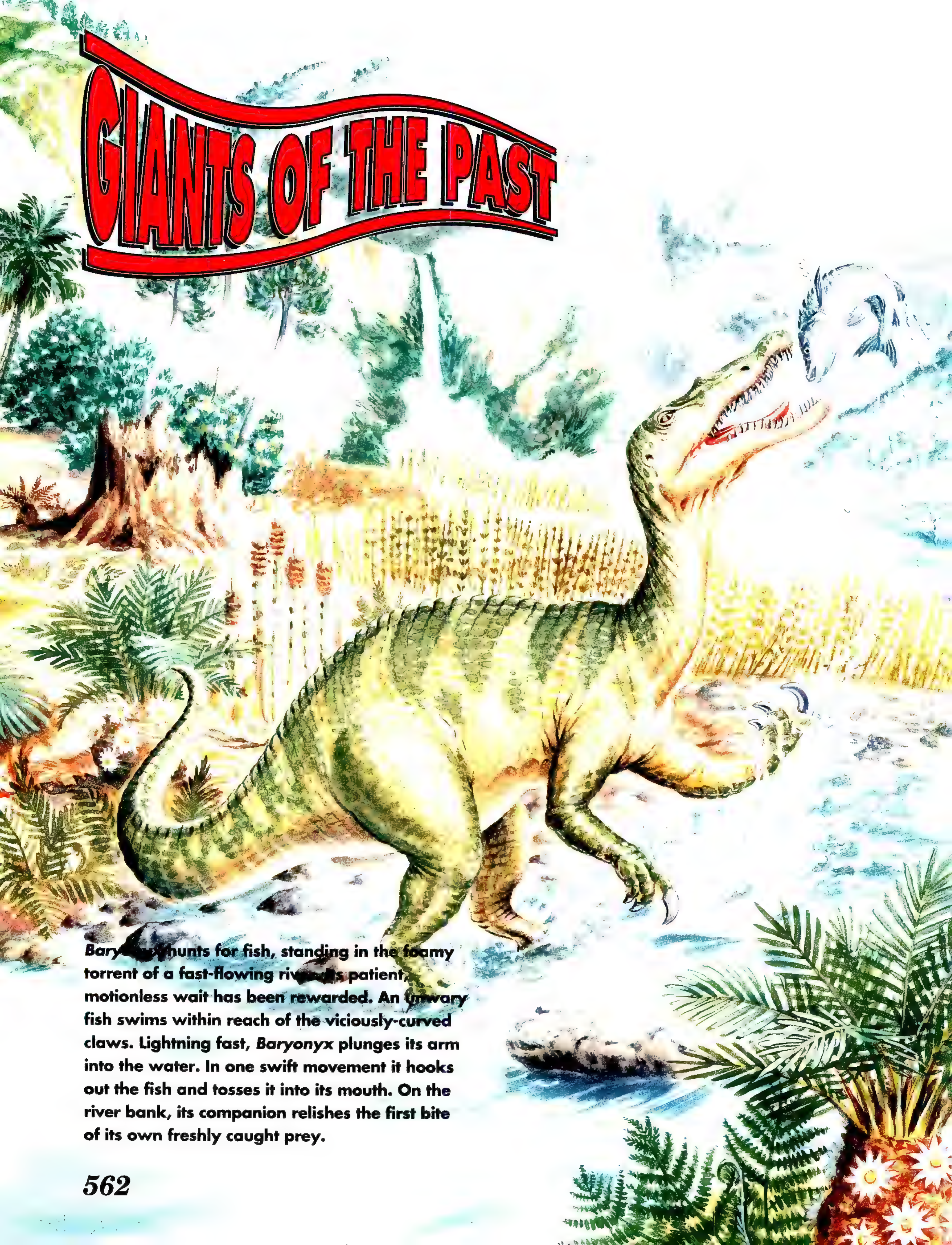
FEASTING INSECTS

Insects also helped with pollination. Flowers grew colourful petals to attract insects, and sugary nectar to feed them. As the insect sipped nectar, pollen dusted its body. The insect carried this pollen to other flowers. The magnolia, one of the early flowers, still relies on beetles, flies, butterflies and bees to carry its pollen.

ANCIENT TO MODERN

At the beginning of the Cretaceous, the landscape would have seemed unfamiliar to us. It was mostly conifers, ferns, mosses and cycads. By the end of the period, the scene had changed enormously. Nine-tenths of the forests were made up of flowering plants. Even as dinosaurs died out, flowering plants were taking over.

GIANTS OF THE PAST

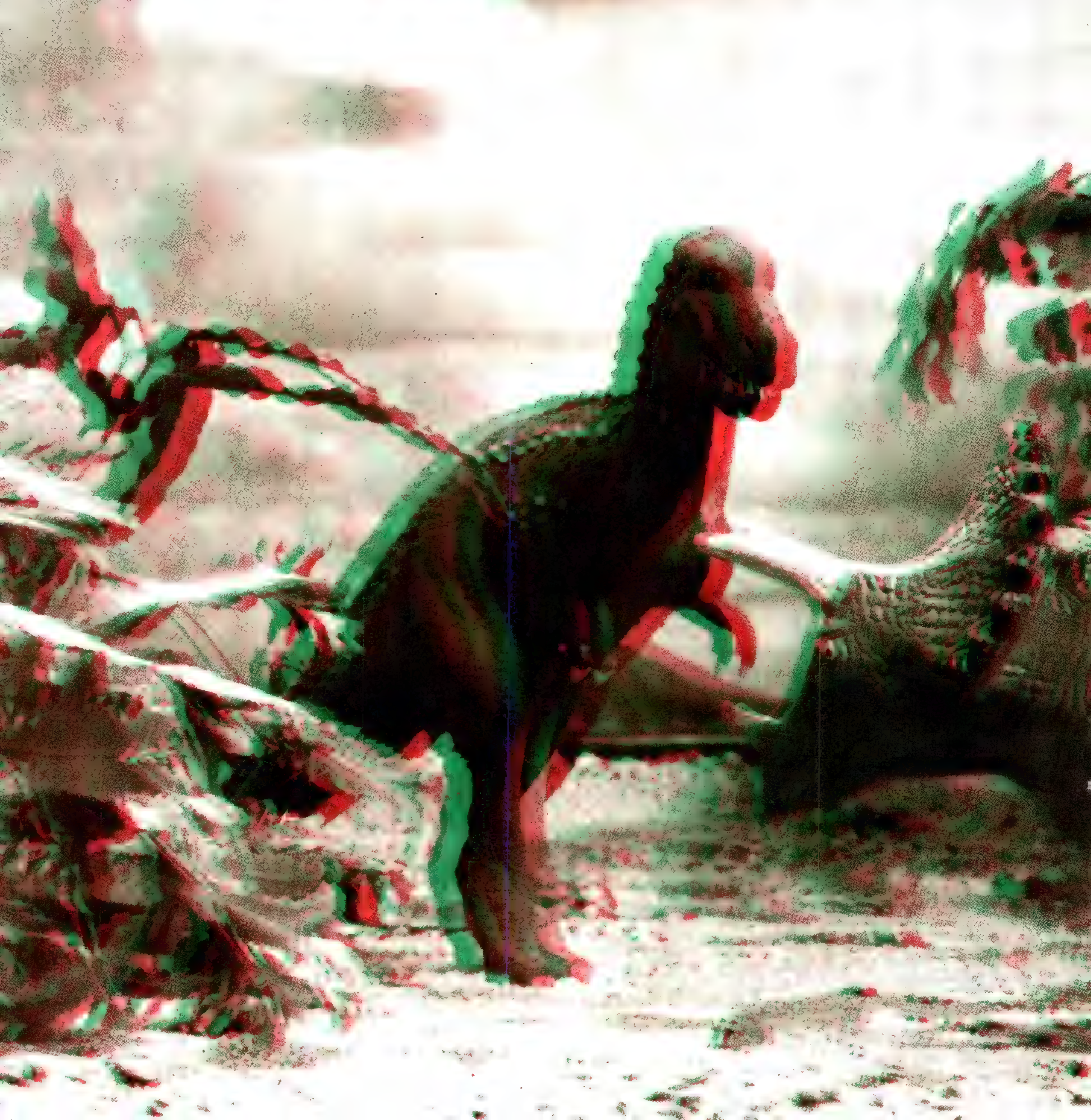


Baryonyx hunts for fish, standing in the foamy torrent of a fast-flowing river. Its patient, motionless wait has been rewarded. An unwary fish swims within reach of the viciously-curved claws. Lightning fast, *Baryonyx* plunges its arm into the water. In one swift movement it hooks out the fish and tosses it into its mouth. On the river bank, its companion relishes the first bite of its own freshly caught prey.

BARYONYX

3-D Gallery 33

TYRANNOSAURUS REX AND TRICERATOPS



- Two ceratopians come face-to-face with a carnosaur
- This meeting may have taken place 67 million years ago in the Late Cretaceous in North America
- *T rex* was 14m long, *Triceratops* was 9m long
- *T rex* ate meat, *Triceratops* ate plants

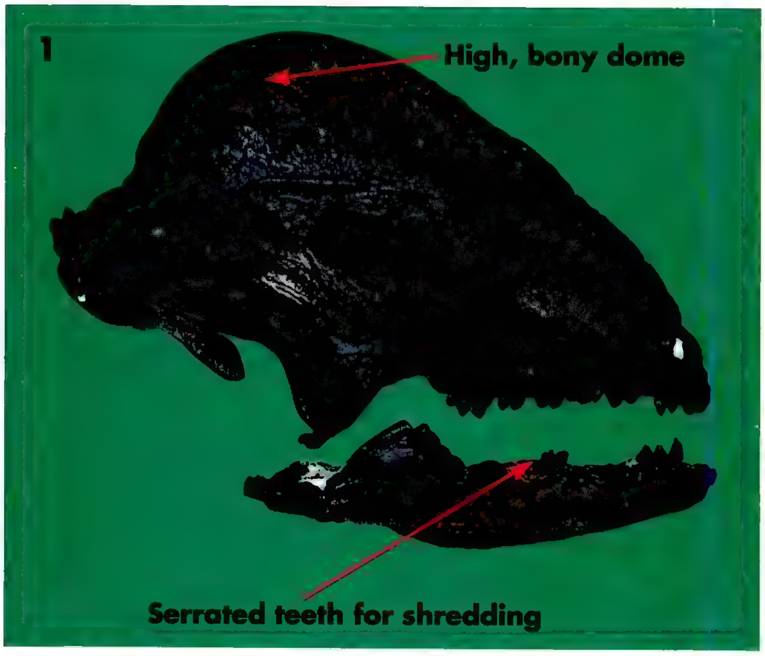
Skulls

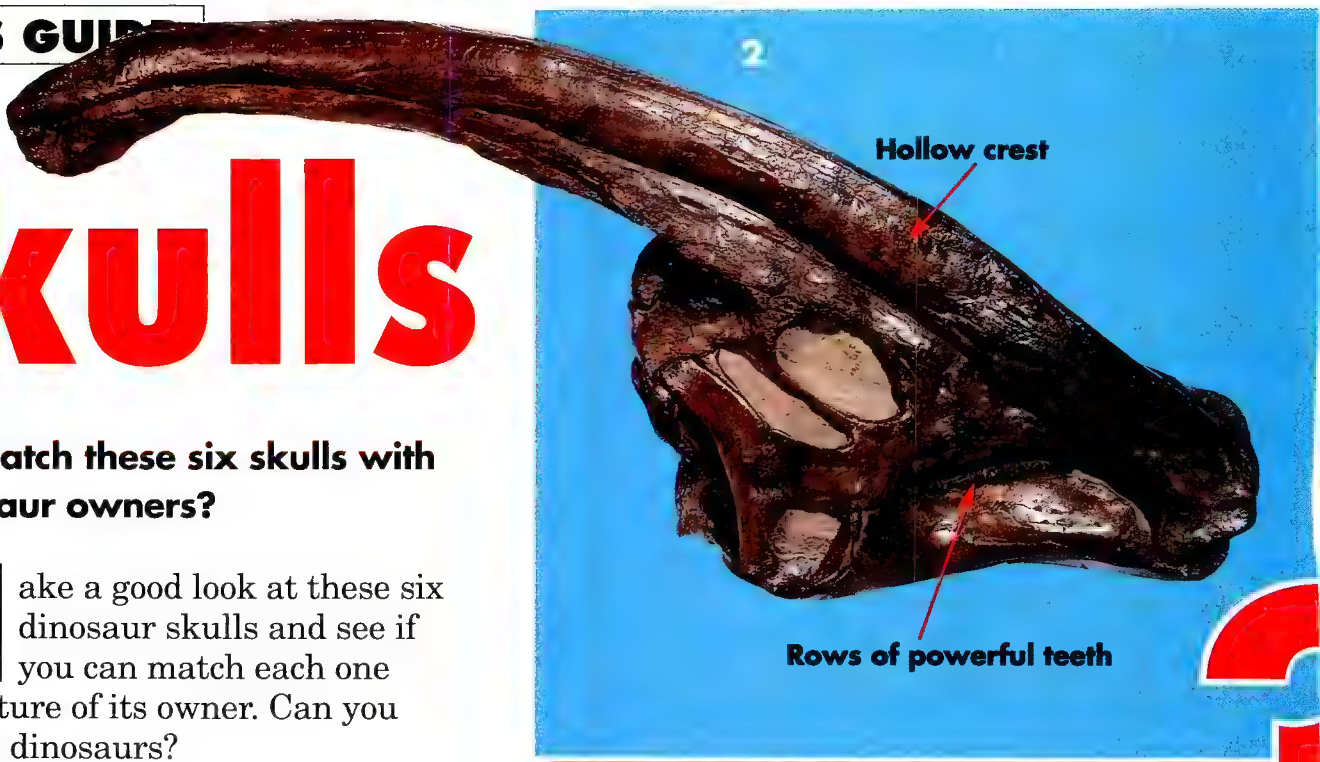
Can you match these six skulls with their dinosaur owners?

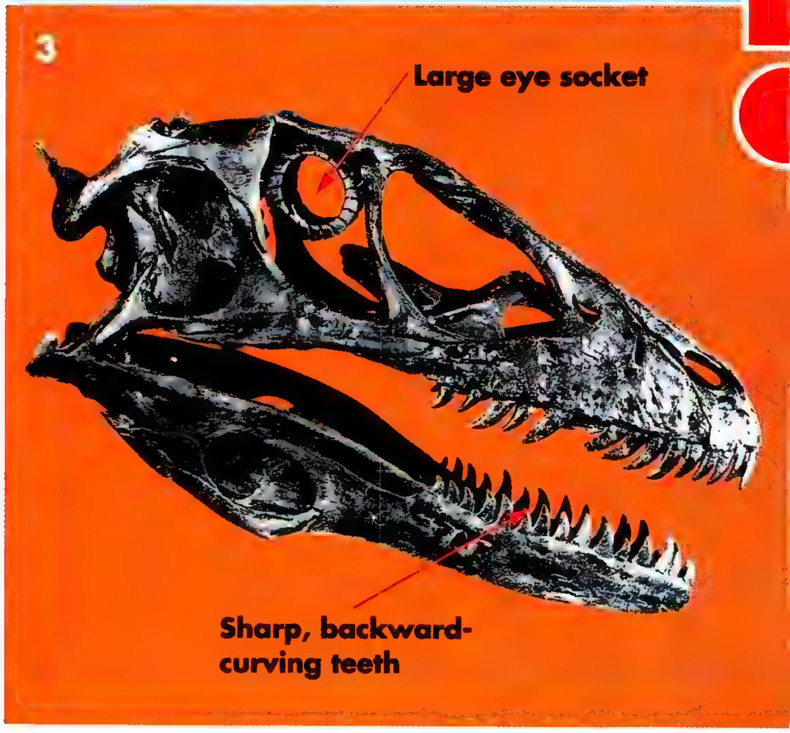
Take a good look at these six dinosaur skulls and see if you can match each one with the picture of its owner. Can you name all six dinosaurs?

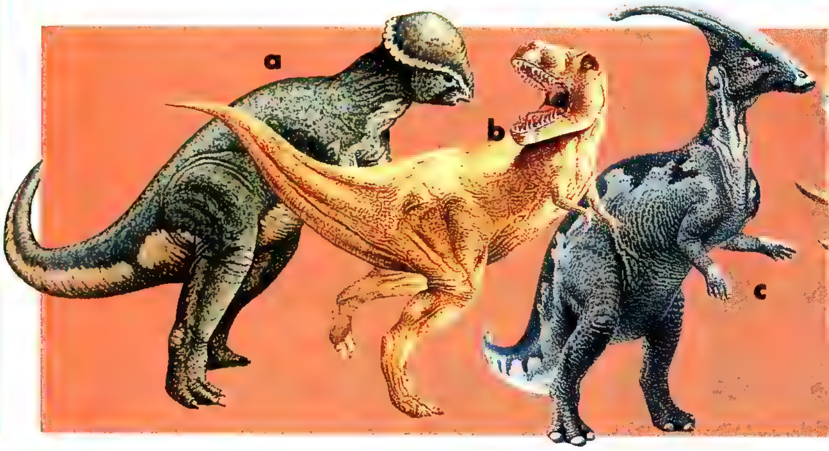
LOOKING FOR CLUES

Here are some clues which will point you in the right direction. What shape is the skull? Are the teeth designed to tear up meat or rake leaves off trees? Does the snout have a beak, a duckbill, or just a mouthful of terrifying teeth? Use your dinosaur know-how to put the clues together and name each dinosaur. Then stand on your head and find the answers at the bottom of the page.

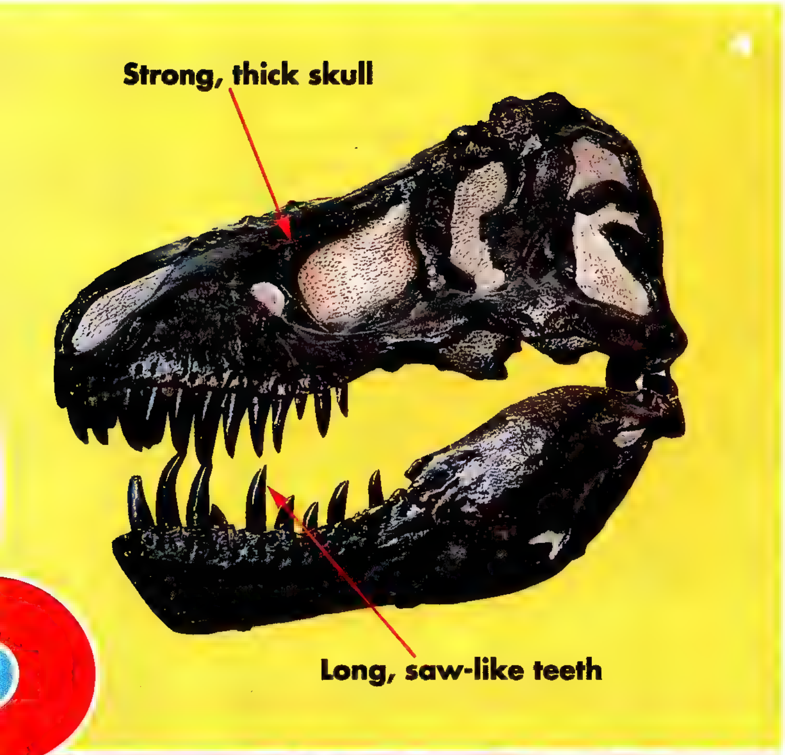






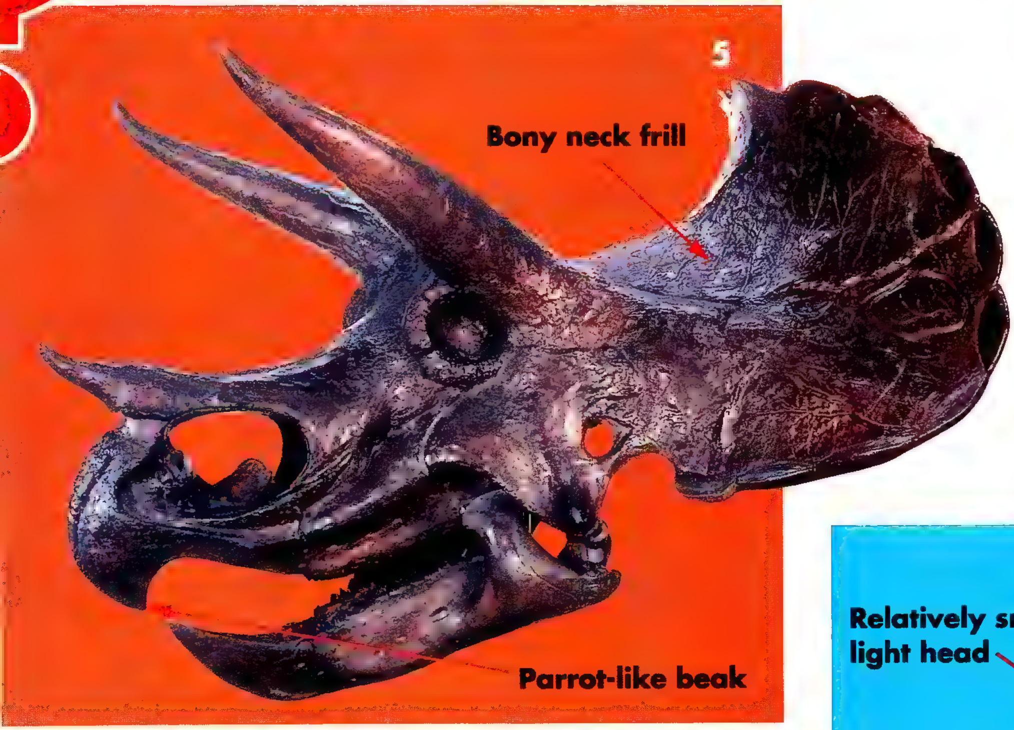


iplodocus (f)



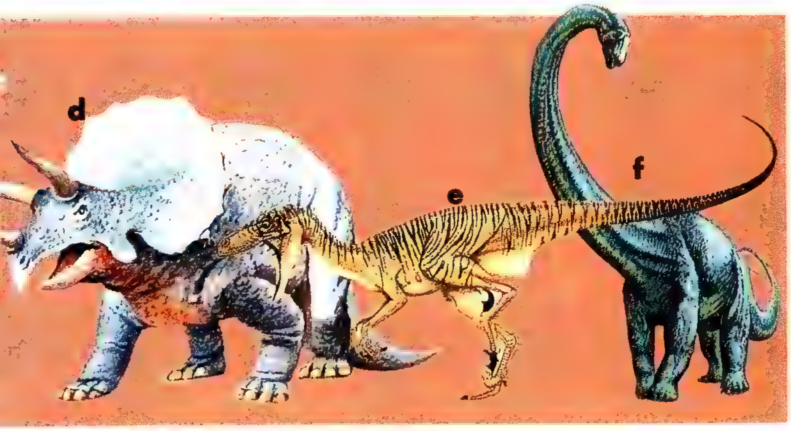
Is it true that massive dinosaurs had tiny skulls?

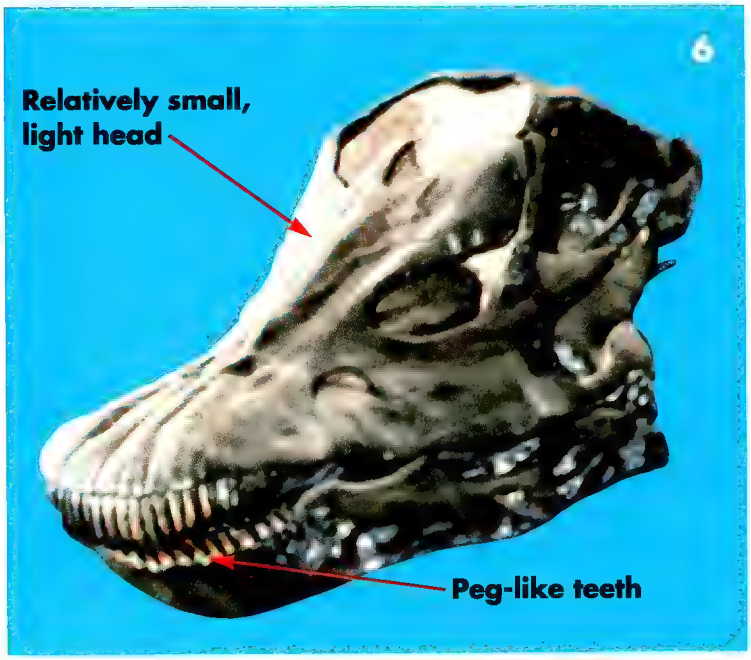
Some sauropods were as large as several elephants put together. But this did not always mean that their heads were big too. Some huge, plodding plant-eaters had skulls the size of a horse's head. *Stegosaurus*, a 7m-long dinosaur with bony plates on its back, had a skull that measured only 35cm long (that's about as long as two pencils).



WHAT TO SPOT

- Meat-eater or plant-eater?
- What sort of teeth did it have?
- What were its jaws like?
- Did it have a beak?

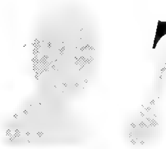




Answers: 1 Stegoceras (a), 2 Parasaurolophus (c), 3 Deinonychus (e), 4 Tyrannosaurus rex (b), 5 Triceratops (d), 6

Kings of the meat-eaters

What did the giant meat-eaters of the dinosaur world eat and how did they catch their prey?



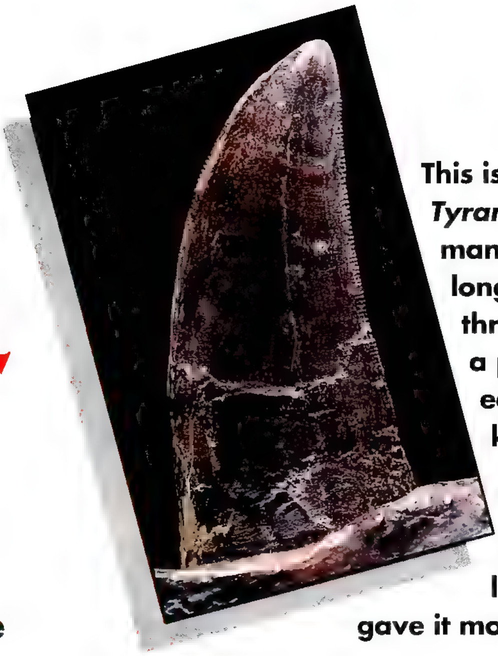
The biggest hunters were the tyrannosaurs. And the largest and most frightening of these was *Tyrannosaurus rex*.

HIDDEN TERROR

Tyrannosaurus hunted horned and duckbilled dinosaurs. The timid plant-eaters were always on the alert for an enemy. Some sprinted away on two legs when danger threatened. The giant meat-eaters had to move fast to catch them. But tyrannosaurs were too big to be able to chase after prey for long. They probably hid and lay in wait for their victims to pass by. Then they pounced and took them by surprise.

MIGHTY MEAT-EATERS

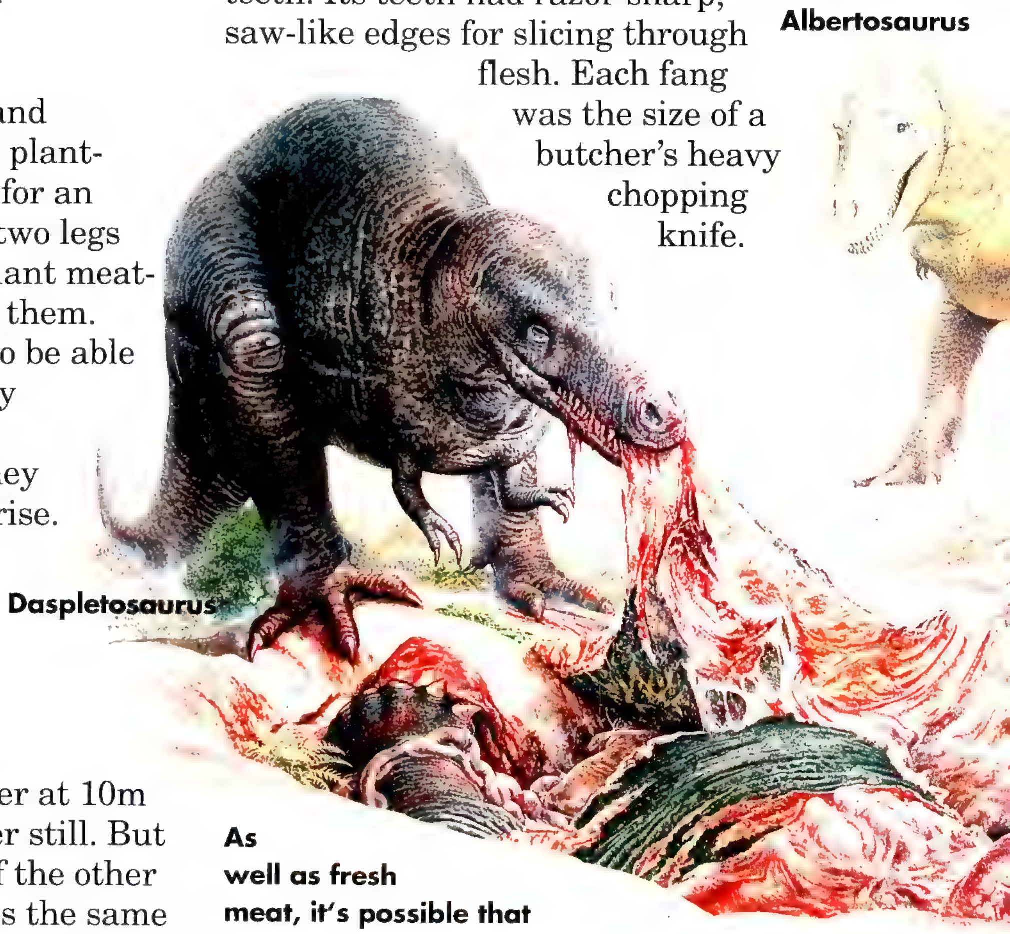
The tyrannosaurs, or 'tyrant lizards', roamed the Earth at the end of the Dinosaur Age. *Tarbosaurus* looked very like *Tyrannosaurus* but it was smaller at 10m long. *Daspletosaurus* was shorter still. But its teeth were larger than any of the other tyrannosaurs. *Albertosaurus* was the same size as *Daspletosaurus* but lighter. It was probably a faster hunter.



This is just one of *Tyrannosaurus rex'* many teeth. It is 18cm long and sliced through the flesh of a plant-eater as easily as a carving knife through butter. Look carefully and you will see the saw-like edge which gave it more cutting power.

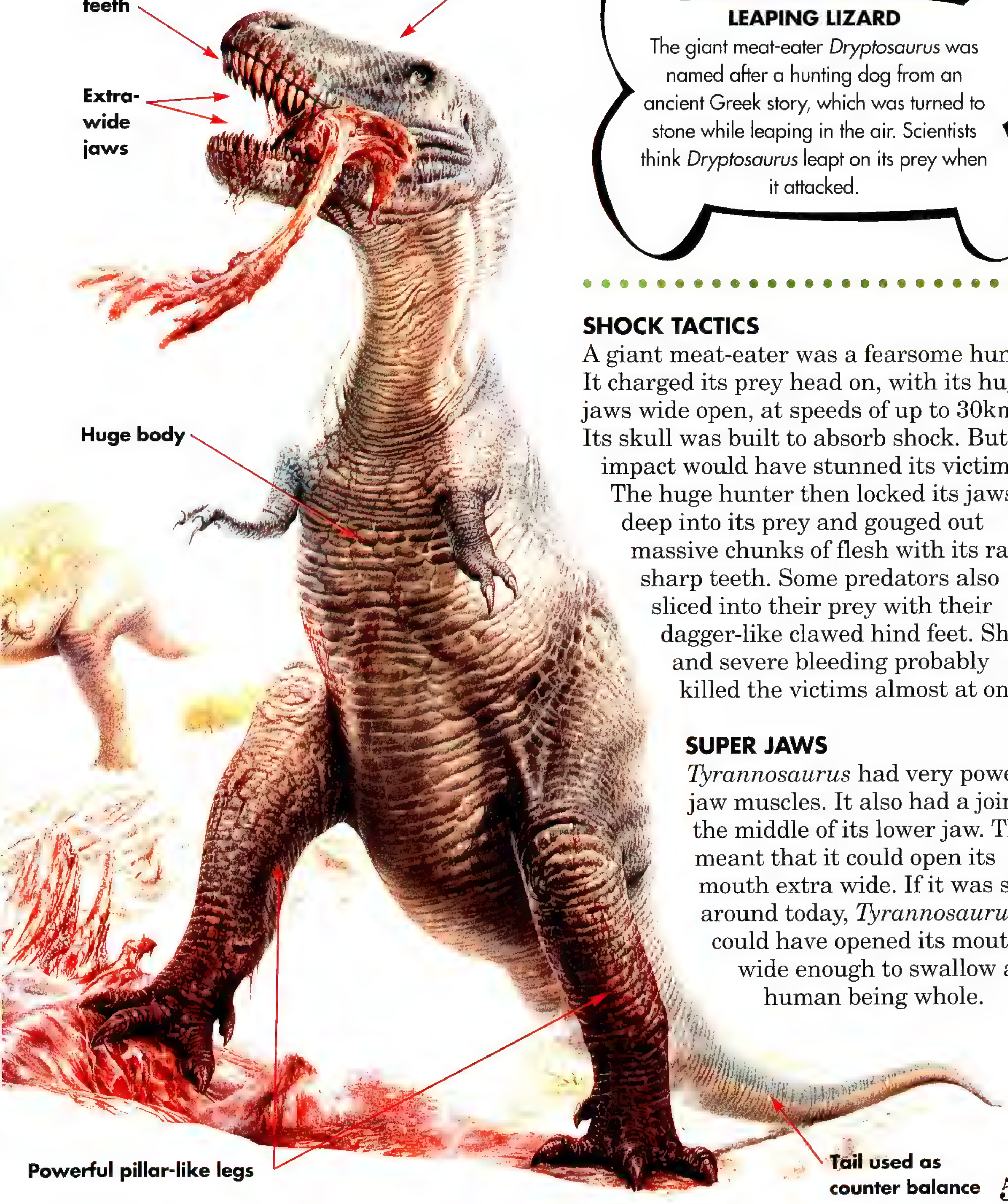
KING SIZE

Tyrannosaurus grew up to 14m long and more than 5m high. It was so tall a man would hardly have reached its knee. The giant hunter had a mighty head and powerful jaws lined with huge, curved teeth. Its teeth had razor-sharp, saw-like edges for slicing through flesh. Each fang was the size of a butcher's heavy chopping knife.



As well as fresh meat, it's possible that big meat-eaters ate the flesh of dead animals they found.

***Tyrannosaurus rex* was well equipped to eat large dinosaurs.**



IT'S A FACT

LEAPING LIZARD

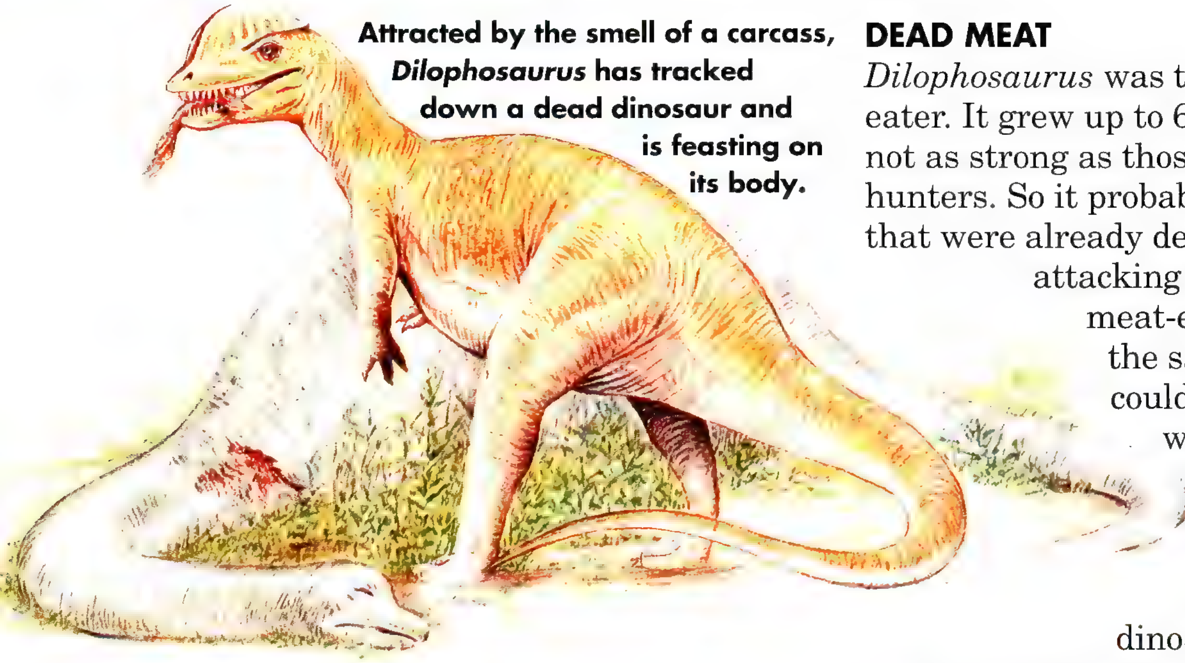
The giant meat-eater *Dryptosaurus* was named after a hunting dog from an ancient Greek story, which was turned to stone while leaping in the air. Scientists think *Dryptosaurus* leapt on its prey when it attacked.

SHOCK TACTICS

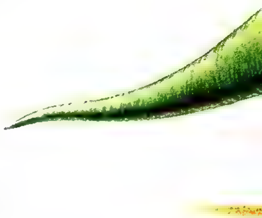
A giant meat-eater was a fearsome hunter. It charged its prey head on, with its huge jaws wide open, at speeds of up to 30km/h. Its skull was built to absorb shock. But the impact would have stunned its victim. The huge hunter then locked its jaws deep into its prey and gouged out massive chunks of flesh with its razor-sharp teeth. Some predators also sliced into their prey with their dagger-like clawed hind feet. Shock and severe bleeding probably killed the victims almost at once.

SUPER JAWS

Tyrannosaurus had very powerful jaw muscles. It also had a joint in the middle of its lower jaw. This meant that it could open its mouth extra wide. If it was still around today, *Tyrannosaurus* could have opened its mouth wide enough to swallow a human being whole.



Attracted by the smell of a carcass, *Dilophosaurus* has tracked down a dead dinosaur and is feasting on its body.



DEAD MEAT

Dilophosaurus was the earliest giant meat-eater. It grew up to 6m long. Its jaws were not as strong as those of the later big hunters. So it probably fed on dinosaurs that were already dead rather than attacking live ones. Other large meat-eaters may have done the same whenever they could. It is an easier way of finding food than chasing after prey. A dead dinosaur gave off a really powerful smell that attracted giant meat-eaters from many kilometres around.

LONG REIGN OF TERROR

Huge, hungry meat-eaters terrorised peaceful plant-eaters from the Early Jurassic Period right up to the end of the Age of the Dinosaurs – that's more than 140 million years. *Tyrannosaurus* was the biggest meat-eater, but other giant hunters were just as deadly. They all had massive bodies on pillar-like hind legs, and big bony heads with short powerful necks.

SPINES AND SAILS

Spinosaurus was the same size as *Allosaurus*. But it had a large, spiny sail that ran down its back. Some spines in its sail were taller than a man. *Spinosaurus* lived in the middle of the Cretaceous. It had a crocodile-like lower jaw and straight teeth and probably hunted like a modern crocodile, too.

Allosaurus

DOGS OF WAR

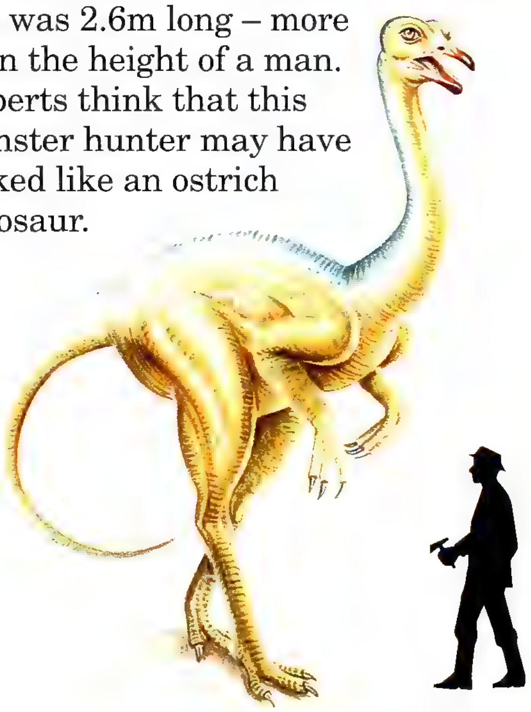
Allosaurus lived 150 MYA in the Late Jurassic. It was twice as long as *Dilophosaurus* and a more active hunter. *Allosaurus* was able to lock on to its prey and hold it tight with its teeth so it could not struggle free. It may have hunted in a pack so it could attack plant-eaters much larger than itself.

A pack of hunting dogs can bring down an animal twice the size of an individual dog. The pack on the left has toppled a wildebeest on the grasslands of Africa. Packs of *Allosaurus* probably behaved like a pack of hunting dogs today.

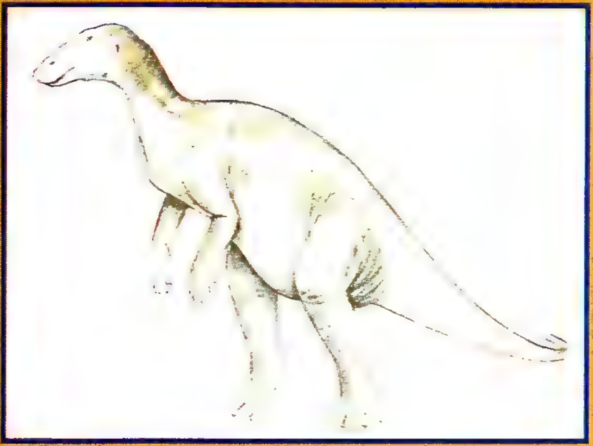
Spinosaurus was large enough to catch and eat plant-eating dinosaurs.

IS THIS WHAT IT LOOKED LIKE?

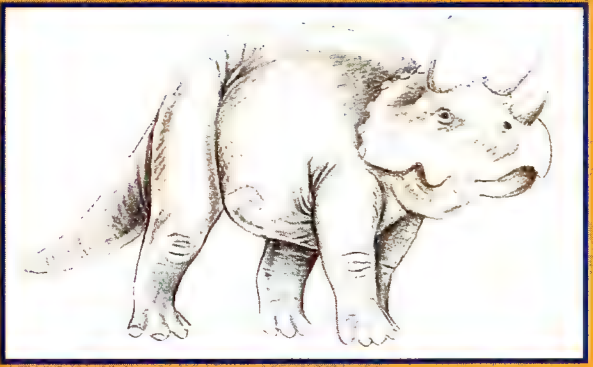
Deinocheirus was a giant meat-eater big enough to rival *T rex*. But no one really knows what it looked like. So far, only its arms have been found. Each one was 2.6m long – more than the height of a man. Experts think that this monster hunter may have looked like an ostrich dinosaur.



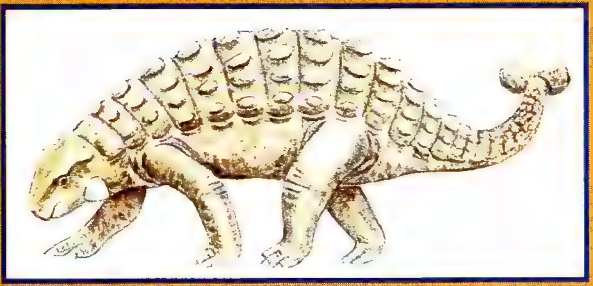
PREY PROFILE



Duckbilled dinosaurs were hunted by Late Cretaceous meat-eaters. Their only defence was to run away. Large meat-eaters attacked massive sauropods, too.

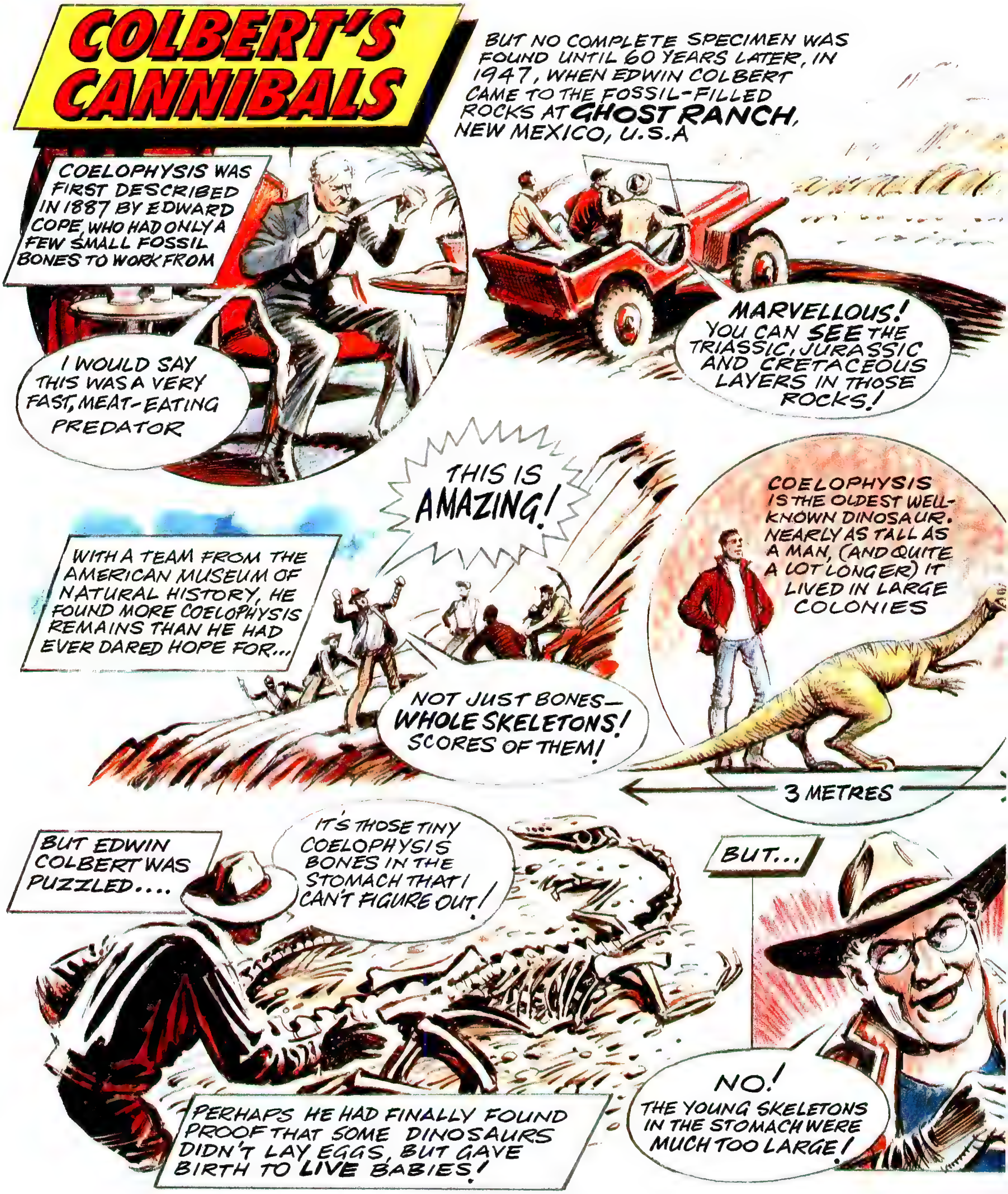


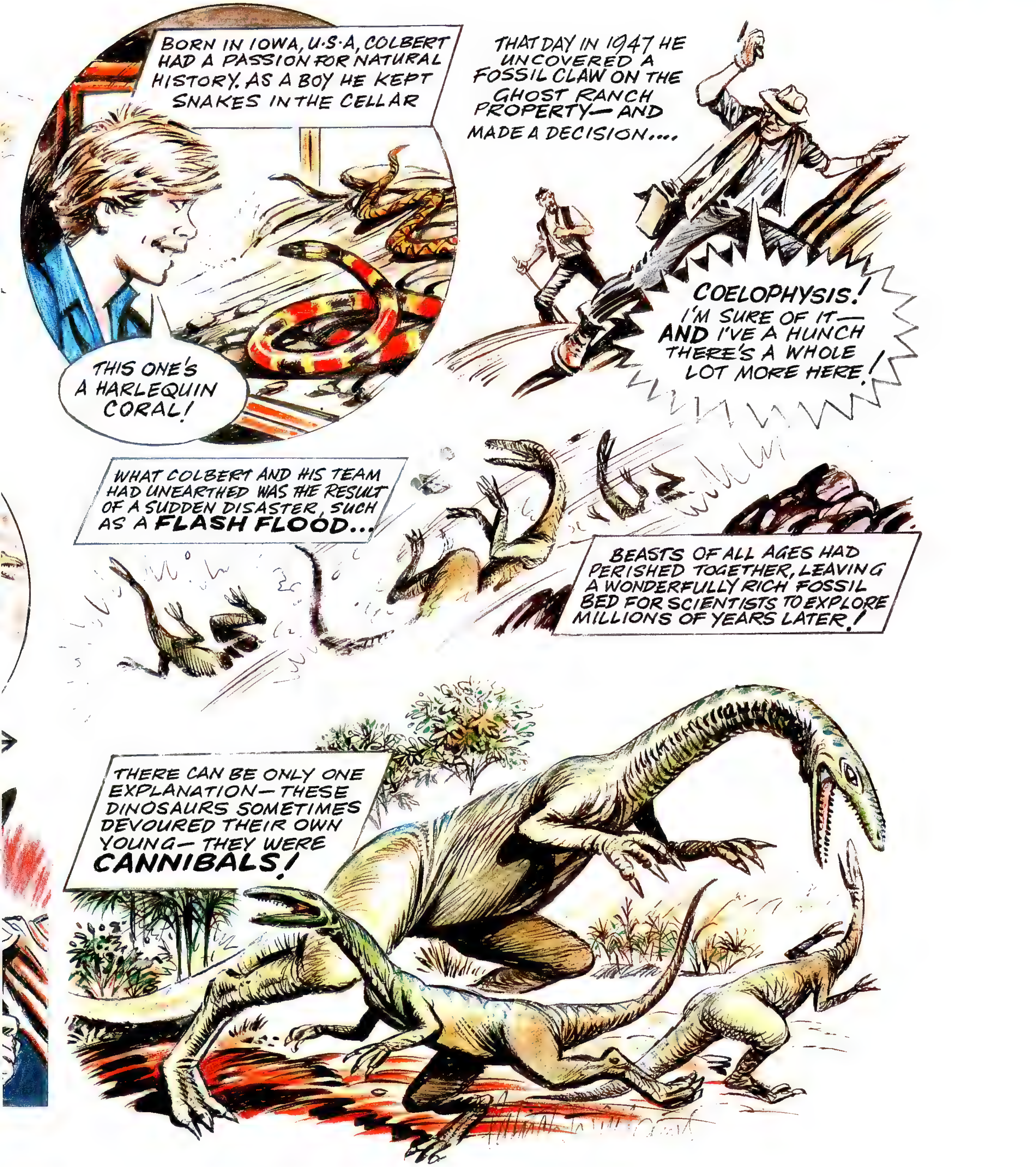
Hungry hunters preyed on horned dinosaurs but had to kill them quickly. These plant-eaters could fight back with their spear-like horns.



Giant meat-eaters also attacked ankylosaurs. But they could be badly wounded by a blow from the ankylosaurs' heavy clubbed tails.

COLBERT'S CANNIBALS


COELOPHYSIS WAS FIRST DESCRIBED IN 1887 BY EDWARD COPE, WHO HAD ONLY A FEW SMALL FOSSIL BONES TO WORK FROM
I WOULD SAY THIS WAS A VERY FAST, MEAT-EATING PREDATOR
BUT NO COMPLETE SPECIMEN WAS FOUND UNTIL 60 YEARS LATER, IN 1947, WHEN EDWIN COLBERT CAME TO THE FOSSIL-FILLED ROCKS AT GHOST RANCH, NEW MEXICO, U.S.A
MARVELLOUS! YOU CAN SEE THE TRIASSIC, JURASSIC AND CRETACEOUS LAYERS IN THOSE ROCKS!
WITH A TEAM FROM THE AMERICAN MUSEUM OF NATURAL HISTORY, HE FOUND MORE COELOPHYSIS REMAINS THAN HE HAD EVER DARED HOPE FOR...
THIS IS AMAZING!
NOT JUST BONES— WHOLE SKELETONS! SCORES OF THEM!
COELOPHYSIS IS THE OLDEST WELL-KNOWN DINOSAUR. NEARLY AS TALL AS A MAN, (AND QUITE A LOT LONGER) IT LIVED IN LARGE COLONIES
3 METRES
BUT EDWIN COLBERT WAS PUZZLED....
IT'S THOSE TINY COELOPHYSIS BONES IN THE STOMACH THAT I CAN'T FIGURE OUT!
PERHAPS HE HAD FINALLY FOUND PROOF THAT SOME DINOSAURS DIDN'T LAY EGGS, BUT GAVE BIRTH TO LIVE BABIES!
BUT...
NO! THE YOUNG SKELETONS IN THE STOMACH WERE MUCH TOO LARGE!


BORN IN IOWA, U·S·A, COLBERT HAD A PASSION FOR NATURAL HISTORY. AS A BOY HE KEPT SNAKES IN THE CELLAR
THIS ONE'S A HARLEQUIN CORAL!
THAT DAY IN 1947 HE UNCOVERED A FOSSIL CLAW ON THE GHOST RANCH PROPERTY— AND MADE A DECISION....
COELOPHYSIS! I'M SURE OF IT— AND I'VE A HUNCH THERE'S A WHOLE LOT MORE HERE!
WHAT COLBERT AND HIS TEAM HAD UNEARTHED WAS THE RESULT OF A SUDDEN DISASTER, SUCH AS A FLASH FLOOD...
BEASTS OF ALL AGES HAD PERISHED TOGETHER, LEAVING A WONDERFULLY RICH FOSSIL BED FOR SCIENTISTS TO EXPLORE MILLIONS OF YEARS LATER!
THERE CAN BE ONLY ONE EXPLANATION— THESE DINOSAURS SOMETIMES DEVOURED THEIR OWN YOUNG— THEY WERE CANNIBALS!

Improve and test your knowledge with...

DINO Fact File

Triceratops holds all the answers. See how you score in the quiz.

1 Which of the following could *T rex* have swallowed in one gulp?

a) an elephant
b) a blue whale
c) a human

2 What is an angiosperm?

a) a flowering plant
b) a mammal
c) a reptile

3 Which of the following dinosaur skulls had a frill?

a) *Brachiosaurus*
b) *Stegoceras*
c) *Triceratops*

4 What was found near *Baryonyx'* ribcage?

a) a shark
b) fish scales
c) a plesiosaur

5 Which of these was not a large meat-eating dinosaur?

a) *Dilophosaurus*
b) *Deinocheirus*
c) *Diplodocus*

Dinosaur droppings

Skeletons are not the only fossils that give us clues about how dinosaurs lived. The remains of fossilized dinosaur droppings, which are called coprolites, give scientists clues to a dinosaur's dinner and even how big its intestines were!

Footprint confusion

Before dinosaurs were understood to be prehistoric animals, people could not explain the fossils and footprints that they left behind. In the early 1800s, dinosaur footprints found in Connecticut were thought to have belonged to a huge bird that lived on Noah's Ark during the famous flood.

6 What did *Dryosaurus* use its five fingers for?

a) to count to 10
b) to gather up plants
c) to rip apart other dinosaurs

7 During which period did flowers first appear?

a) Jurassic
b) Triassic
c) Cretaceous

8 *Nodosaurus* means:

a) nodding head
b) lizard with armour
c) knobbly reptile

9 The remains of *Kakuru* had turned into:

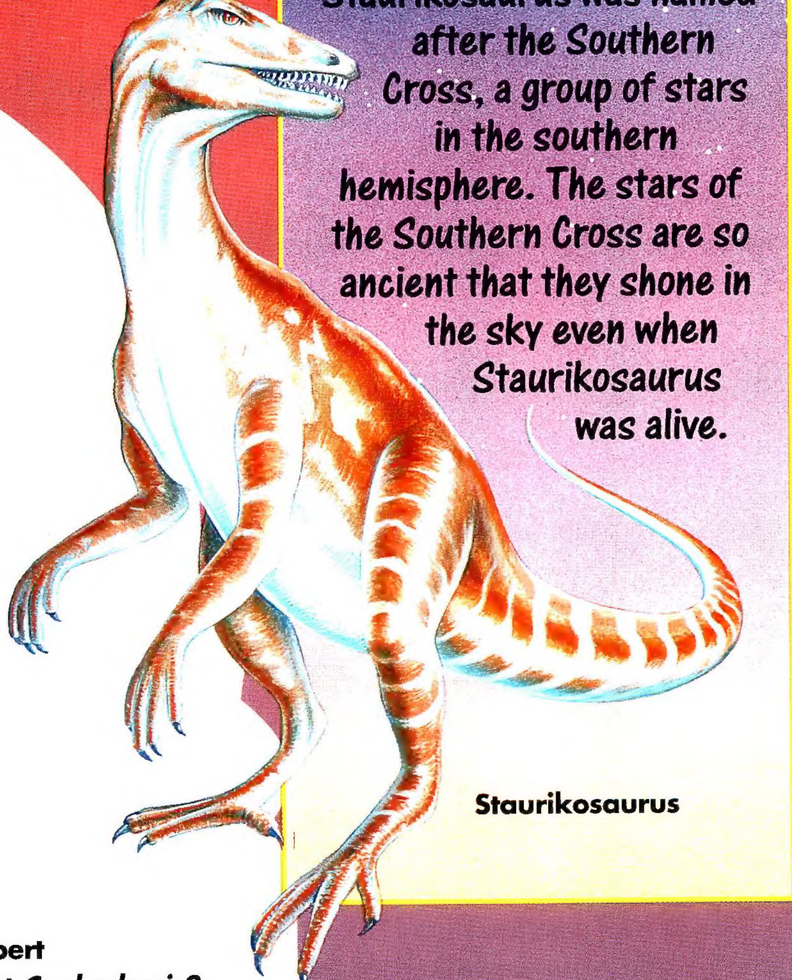
a) diamond
b) opal
c) gold

10 What did Colbert discover about *Coelophysis*?

a) it gave birth to live young
b) it swung from trees
c) it ate its own young

Starstruck

Staurikosaurus was named after the Southern Cross, a group of stars in the southern hemisphere. The stars of the Southern Cross are so ancient that they shone in the sky even when Staurikosaurus was alive.



Staurikosaurus

An alpine story

The Jurassic Period was named after the beautiful Jura mountains that divide France and Switzerland. The rocks in these mountains were laid down 204 - 140 million years ago.

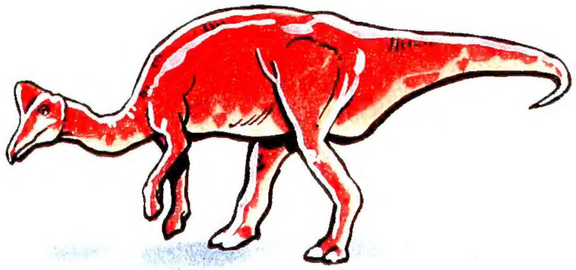
Famous scientist

James Parkinson was famous for two very different reasons. He was the first person unofficially to use the name Megalosaurus, meaning 'great lizard' (William Buckland officially named this dinosaur in 1824). He was also the first person to identify an illness called Parkinson's disease which still bears his name today.

Answers to the questions on inside back cover

JAXARTOSAURUS **80 MYA**

Scientists know very little about this plant-eating dinosaur. It lived in the Late Cretaceous Period in central Asia and China. *Jaxartosaurus* (jaks-art-oh-saw-rus) was longer than two rhinoceroses and walked on two or four legs. Its name means 'Jaxartes reptile'.



JIANGJUNMIAOSAURUS **145 MYA**

This Chinese carnosaur was discovered in 1983. *Jiangjunmiaosaurus* (yang-yun-me-ow-saw-rus) means 'Jiangjunmaio reptile'. It was a large, fierce flesh-eater. *Jiangjunmiaosaurus* walked on two legs and may have had a crested skull.

JUBBULPURIA **80 MYA**

Jubbulpuria (jubb-ool-purr-ia) was a two-legged dinosaur. It lived in the Cretaceous in central India. All that has been found so far are two backbones. It was probably about 1.2m long. Its name means 'from Jabalpur'.

K

KAIJIANGOSAURUS **170 MYA**

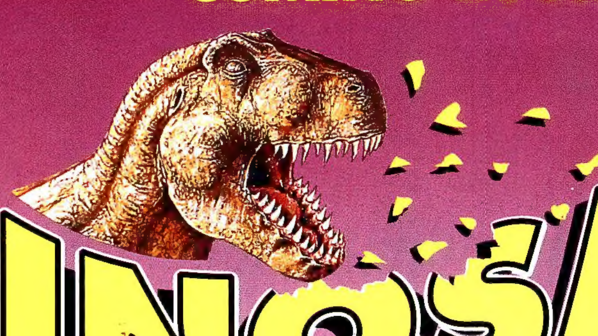
Kaijiangosaurus (ky-yang-goh-saw-rus) was one of the family of 'great lizards', the megalosaurids. It was found in Sichuan, an area in Central China. As it hunted, it strode along on two huge legs. *Kaijiangosaurus* had an impressive set of teeth. It killed by sinking its sharp fangs into the flesh of its prey. *Kaijiangosaurus* was given its name, which means 'Kaijiang reptile' in 1984.

KAKURU **130 MYA**

This speedy dinosaur lived in what is now central South Australia in the Early Cretaceous Period. When it was discovered, all that remained of its skeleton was a shin bone. Over millions of years, most of the bone had turned into the semi-precious stone called opal. The shimmering colours of this gem may have given *Kakuru* (kah-koo-roo) its name, which means 'rainbow serpent'. Flesh-eating *Kakuru* was as long as a small car and ran on two legs.

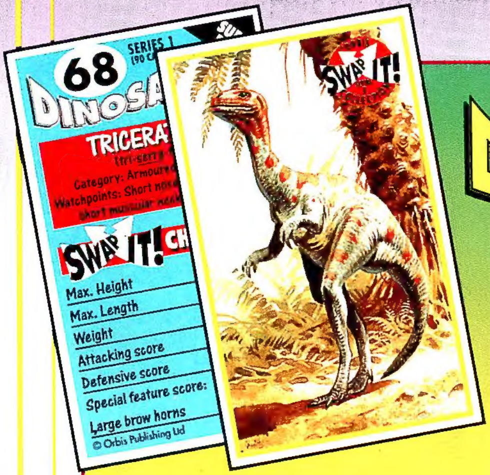
MYA = MILLION YEARS AGO

COMING IN PART 25 OF



DINOSAURS!

Meet *Psittacosaurus*, 'the parrot reptile', in IDENTIKIT. Did dinosaurs live at the South Pole? Find out the chilly details in DINOSAUR WORLD.



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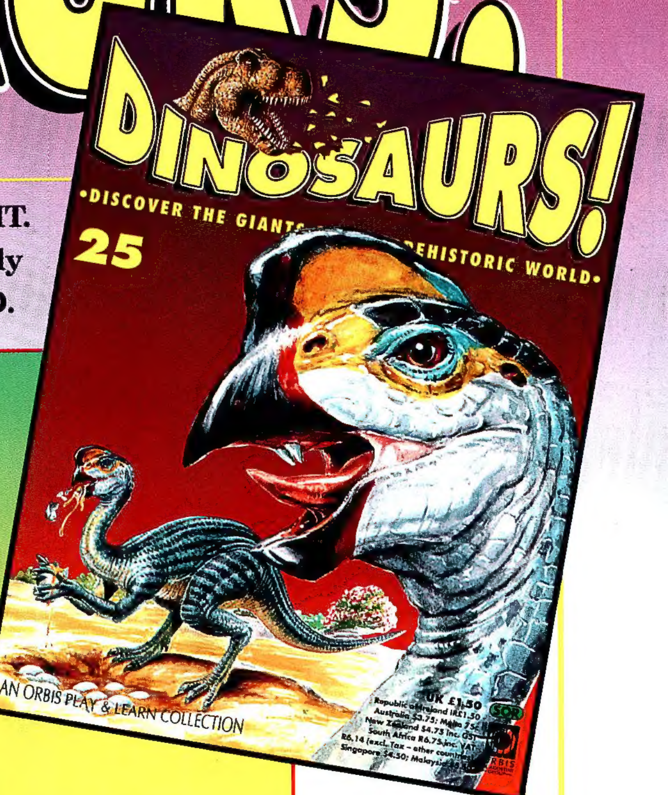
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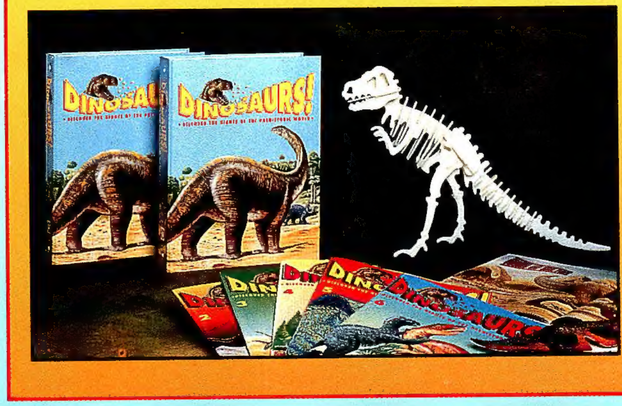

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ANSWERS TO DINO FACT FILE QUESTIONS: 1.c 2.a 3.b 4.b 5.c 6.b 7.c 8.c 9.b 10.c

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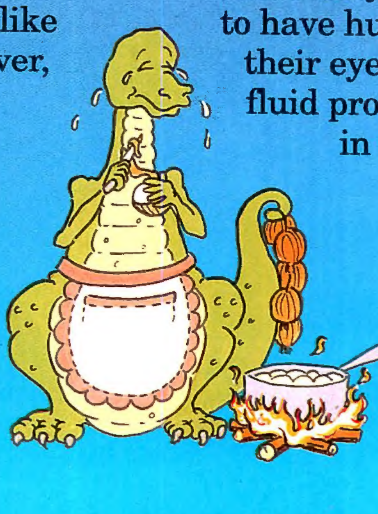
Dr. David Norman of Cambridge University answers your dinosaur questions

ASK THE EXPERT

Did dinosaurs play?

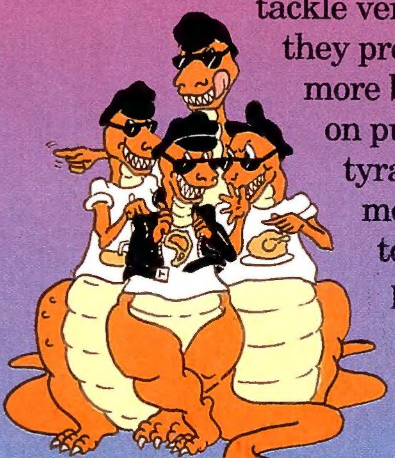
I am afraid we do not know for sure. However, it seems likely that the young of some meat-eating dinosaurs would have taken part in something that we think of as play. Some living animals, such as the big cats, have young which seem to play all the time – they are, in fact, learning their hunting skills: how to creep quietly, how to pounce, where to bite. Young theropod dinosaurs may also have learnt to fight by playing.

Did dinosaurs have toenails?



Dinosaurs did not have toenails like human toenails. They did, however, have claws and hoofs of various types. These ranged from great, thick hoofs on the toes of big ceratopians such as *Triceratops,* to short curved ones on the feet of the sauropods. Great meat-eaters, such as *Allosaurus*, had massive, extremely sharp claws on their feet.

Did T rex hunt in packs?



T rex skeletons are extremely rare so it is very hard to tell whether they sometimes hunted in packs, or always hunted on their own. My suspicion is that adult tyrannosaurs probably hunted alone. They may have occasionally worked together to tackle very large prey, but they probably got together more by accident than on purpose. Young tyrannosaurs may have moved in small groups to bring down large prey, but when they grew up they probably went off to live alone.

Could dinosaurs cry?

No! It seems very unlikely that dinosaurs cried. Crying is a human emotion and not one that is found elsewhere in the animal kingdom. Reptiles do not cry, although if you watch turtles laying eggs you might think they are crying, because they seem to have huge, sticky tears pouring from their eyes. Theses are not tears, but a fluid produced to control the salt level in the turtles' blood.

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